PROJECT 14C/D

Yuba County Water Agency Coordinated Operations Project (Long-term)

1. Project Description

Project Type:	**System improvement/groundwater/surface water planning**
Location:	**Yuba County**
Proponent(s):	**Yuba County Water Agency (YCWA or Agency)**
Project Beneficiaries:	**ACID, downstream users, the environment, the Sacramento-San Joaquin Delta**
Total Project Components:	**Short-term components, project implementation**
Potential Supply:	**100,000 to 150,000 acre-feet per year (ac-ft/yr)**
Cost:	**Unknown; to be determined by feasibility study**
Current Funding:	**None**
Short-term Components:	**Hydrologic and feasibility reports**
Potential Supply (by 2003):	**None**
Cost:	**$1.75 million**
Current Funding:	**None**
Implementation Challenges:	**Local participation/acceptance, project relies upon conjunctive use implementation, stream impacts, regulatory uncertainty**
Key Agencies:	**Yuba County stakeholders, member districts, CDWR, U.S. Bureau of Reclamation (USBR), California Department of Fish and Game (CDFG), National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), FERC,**

Summary

The Yuba County Water Agency Coordinated Operations Project would be a proposal to operate the surface water facilities of the Yuba River Development Project (YRDP) in coordination with the State Water Project (SWP) and Central Valley Project (CVP) to realize increased supplemental water supply benefits for out-of-county use.

A long-term approach to managing the surface water resources within the Agency through the coordinated operation of the Agency's project with other water supply projects would provide an opportunity to more efficiently develop supplemental water supplies for out-of-

county uses. The project may be viable, so long as such a program is developed in a manner that ensures the following:

- Water supplies are fully available to meet the present and future needs within the Agency service area on a reliable basis
- The Agency's flood control restoration and improvement project is fully implemented
- The Agency obtains certainty in regulatory requirements for the operation of its project to address in-stream beneficial uses in a balanced manner
- The Agency receives financial and other support in implementing projects that would enhance the fishery habitat of the lower Yuba River
- The Agency receives a source of revenue to help implement the Agency's water supply and flood control objectives
- The value to the Agency of hydroelectric generation from the Agency's project is preserved

Short-term Component

The short term component of this project would consist of a feasibility-level investigation of water supply benefits for out-of-county use. This investigation would include coordinated operation alternatives that could provide statewide benefits while preserving and enhancing local water supply reliability. Aspects of the investigation would include multi-purpose reservoir operational analysis, quantification of water supply delivery net benefits, in-stream flow effects and benefits, power production impacts, and recreational and in-reservoir effects. The investigation would include analysis to track these effects along the lower Yuba River and throughout the SWP and CVP service areas with focus on the Bay-Delta environment.

The main objective of the feasibility study would be to determine the optimal criteria for reservoir operation that would provide for the Agency's local water supply objectives and maximize out-of-county water supply benefits in conjunction with fishery enhancement. Because of the complexities of the Yuba River system, the multi-purpose obligations of New Bullards Bar Reservoir, the Bay-Delta system, and the SWP and CVP operations and third-party impacts, the investigation into each aspect of the water resource environment affected by this project would require complex analysis and coordination with many stakeholders and regulatory agencies.

Long-term Component

The primary purpose of this evaluation is to evaluate the potential for this project to provide water supply benefits in the short-term (by end of 2003). As part of this initial evaluation, potential long-term components of the proposed project (defined as any part of the project proceeding past or initiated after December 2003) have been considered on a conceptual level. Further consideration and technical evaluation of long-term component feasibility and cost will occur as the next level of review under the Sacramento Valley Water Management Agreement. Long-term-component project descriptions are included in these short-term project evaluations only as a guide to the reader to convey overall project intent.

Background

For the past 15 years, the YCWA has responded to the needs of the State in times of insufficient water supplies by participating in short-term (single year) water transfers. These transfers have provided a crucial supplemental source of supply to state, federal, and local water supply projects for agricultural, municipal and environmental beneficial uses. These short-term water transfers, however, have been less efficient than a long-term approach to supplemental water supplies from the Yuba River Development might be. For example, because each party to a short-term transfer must conservatively protect its interests, not only for the term of the transfer but also to avoid future impacts, the full potential for developing supplemental water supplies through water transfers has not yet been developed.

In order to establish a coordinated operations "accord" with a multi-agency agreement for the YRDP Yuba, the Agency has established the following six objectives:

- Water supplies to meet the present and future needs within Yuba County are fully available on a reliable basis
- The Agency's flood control restoration and improvement project is fully implemented
- The Agency achieves greater certainty in regulatory requirements for the operation of its project to address in-stream beneficial uses in a balanced manner
- The Agency receives financial and other support in implementing projects that would enhance the fishery habitat of the lower Yuba River
- The Agency receives a source of revenue to help implement the Agency's water supply and flood control objectives
- The value to the Agency of hydroelectric generation from the Agency's project is preserved

Yuba River Watershed Overview

The Yuba River basin drains approximately 1,339 square miles of the western Sierra Nevada slope, including portions of Sierra, Placer, Yuba, and Nevada counties. The Yuba River is a tributary of the Feather River, which, in turn, is a tributary of the Sacramento River (Figure 14C/D-1). The average annual unimpaired flow of the Yuba River at Smartville is 2.45 million acre-feet (maf). However, a substantial portion of this water is diverted out of the watershed and is not available to the lower Yuba River. The annual unimpaired flow has ranged from a high of 4,925,000 acre-feet in 1986 to a low of 370,000 acre-feet in 1977.

Since the early 1900s, the Yuba River basin has been developed for mining and debris control, water supply, power generation, and flood control. This development includes the upstream hydroelectric diversions by Pacific Gas and Electric Company (PG&E); hydroelectric and irrigation diversions by Nevada Irrigation District (NID) and Oroville-Wyandotte Irrigation District (OWID); the construction of Daguerre Point Dam and Englebright Dam by the California Debris Commission which were transferred to the U.S. Army Corps of Engineers (COE) for debris control; and the construction of New Bullards Bar Dam by the Agency for water supply, flood control, hydroelectric generation, recreation, and fish and wildlife enhancement.

Daguerre Point Dam, the first dam constructed on the lower Yuba River, is located about 12.5 miles downstream of the current Englebright Dam. Construction was completed in 1906, with diversion of the river over the dam being completed in 1910 (CDFG, 1991). Daguerre Point Dam has two fish ladders over the dam (north and south ladders) that allow anadromous salmonids to pass the structure. However, these ladders are ineffective at facilitating fish passage at certain river flows. Today, Daguerre Point Dam is the location of the majority of water diversions from the lower Yuba River.

Englebright Dam, the second dam constructed on the lower river, was built by the Corps in 1941 to collect placer-mining debris that were moving down the Yuba River into the Sacramento Valley. All three branches of the Yuba River flow into Englebright Reservoir. Consequently, construction of Englebright Dam completely blocked anadromous fish migration into the north, middle, and south forks of the Yuba River. The dam constitutes the upstream extent of anadromous fish migration today. The approximately 24-mile-long reach of the Yuba River between Englebright Dam and its confluence with the Feather River has been defined as the lower Yuba River (Figure 14C/D-1).

The Agency began operation of its YRDP in 1970. As part of the YRDP, New Bullards Bar Dam was built on the North Yuba River. The New Bullards Bar Dam and Reservoir, Colgate Powerhouse, and Narrows II Powerhouse, make up the principal components of the YRDP, which the Agency constructed in the 1960s. The Agency operates the Colgate and Narrows II Powerhouses below New Bullards Bar and Englebright Dams, respectively. The release capacity of the Narrows II Powerhouse is approximately 3,400 cubic feet per second (cfs), which defines the Agency's greatest controlled release capability from Englebright Reservoir into the lower Yuba River.

New Bullards Bar Reservoir, located upstream of Englebright Dam, is the primary storage reservoir within the Yuba River basin, with a storage capacity of about 966,000 acre-feet. The normal release capacity from New Bullards Bar Reservoir, through New Colgate Powerhouse is about 3,700 cfs. Fifteen other reservoirs have been constructed in the upper portion of the basin, with a combined storage capacity of approximately 400,000 acre-feet. Except for New Bullards Bar Reservoir, there is only minimal storage for regulation of snowmelt within the basin. The smaller storage facilities on the headwaters of the South Yuba and Middle Yuba River usually fill with early runoff. Hence, much of the spring and early summer flow to the lower Yuba River is a result of uncontrolled snowmelt within the basin. In the summer and early fall, prior to the precipitation season, most of the flow in the lower Yuba River is regulated by releases from New Bullards Bar Reservoir.

The coupled operation of New Bullards Bar Reservoir and Englebright Reservoir includes releases through the New Colgate, Narrows I (owned by PG&E), and Narrows II hydro-electric generating facilities, providing the principal regulation of the lower Yuba River. Under existing water rights and agreements, PG&E may operate up to 45,000 of the 67,000 acre-feet of Englebright Reservoir storage, but only about 10,000 acre-feet of this capacity is typically exercised. This fluctuation of the Englebright Reservoir storage is principally for daily or weekly regulation of winter freshets and because Englebright Reservoir is an afterbay for Colgate Powerhouse operations. The average impaired inflow into Englebright Reservoir (unimpaired flow minus upstream impairments) is about 1.6 maf per year. On average, 1.1 maf per year passes through New Bullards Bar Reservoir; the remaining 0.5 maf is local inflow and flow from the South Yuba and Middle Yuba rivers

directly into Englebright Reservoir. Below Englebright Reservoir, local inflow and runoff from Deer Creek contribute, on average, an additional 170,000 ac-ft/yr below the Smartville gage.

Yuba County Water Agency

Institutional

The Agency is an independent, stand-alone organization created by the Yuba County Water Agency Act. The Agency was formed in 1959 to "develop and promote the beneficial use and regulation of the water resources of Yuba County ….". The Agency and its YRDP are subject to numerous contracts, agreements, licenses, permits, and regulatory oversight from a wide range of organizations including a major utility (PG&E), state and federal resource and regulatory agencies, and local water providers.

Since its formation in 1959, the Agency has worked with its member districts, stakeholders, and local, state, and federal agencies to develop water resources within Yuba County for all beneficial uses. The YRDP is the major water resource management facility owned and operated by the Agency.

Water Rights

For the diversion and use of waters within the Yuba River watershed, the Agency holds various water right permits and licenses for power, irrigation, domestic, and industrial uses. The place of use of these rights is the Agency's service area, which covers the areas of its member districts and includes most of the agricultural land in Yuba County.

The water rights to be utilized for the operation of the Coordinated Operations Project include those covered by water-right permits 15026, 15027, and 15030. These permits provide more than sufficient water rights for the project.

Water Supply

The water supplies of the Yuba River are extensive, but not exhaustive. The Yuba River watershed is resilient in that it not only has an area with one of states' highest average annual precipitation, but because the rocky terrain of the upper watershed yields a high percentage of precipitation as direct runoff. Inflows to New Bullards Bar Reservoir are about 50 percent of the unimpaired runoff of the Yuba River watershed. Historically, the Agency has been able to utilize the flexibility of operation of New Bullards Bar Reservoir to provide more than 150,000 ac-ft (including groundwater substitutions) of surplus water supply in a single water year for out-of-county transfers.

As part of coordinated operations of the YRDP, the Agency would operate the project to regulate waters of the Yuba River in coordination with groundwater pumping activities. This coordinated operation is intended to increase the overall yield of Yuba County's water resources for beneficial use. Because of the recent increased demand on the YRDP from the State Water Resources Control Board's Decision D-1644 which requires substantially greater flows for in-stream purposes, different long-term in-stream flow requirements and conjunctive use of groundwater are needed to re-establish some of the operational flexibility that might produce supplemental water for out-of-county beneficial use. Detailed hydrologic analysis during the feasibility study would be needed to determine the long-term in-stream

flow requirements and extent of groundwater conjunctive use operations that are needed to re-establish a reliable local water supply and provide for out-of-county deliveries.

Without conjunctive use, the projected future in county water demand conditions and the long-term in-stream flows specified in D-1644 after 2006 will create deficiencies in water deliveries in many years. Figure 14C/D-2 is a graph of the consumptive use demand delivery deficiencies that result from model simulations using the past 71 years of hydrologic record, D-1644 long-term in-stream flows, and projected future in-county water demands, assuming no conjunctive use operations.

2. Potential Project Benefits/Beneficiaries

Project Objectives

Statewide water supply operations, at the most basic level, could benefit substantially from a significant dry-year supply from the Yuba River. The evidence of this substantial benefit can be seen from the numerous transfers that Agency has participated in to provide vital water supplies in drought years. This direct water supply benefit could be up to 100,000 to 150,000 ac-ft in dry years.

A secondary, but real, water supply benefit from the project would be the increased flexibility of operation of the SWP and CVP facilities. For example, should the SWP operators have a supplemental, dry-year water supply available for future years, the rule curves that govern carryover storage operational levels for Oroville Reservoir could be modified to allow for greater deliveries, and therefore smaller delivery deficiencies in drought years.

Three major areas of benefit from coordinated operations are possible. First, long-term coordinated operations would provide an annual benefit of increased releases from New Bullards Bar Reservoir to the Delta for use by the SWP and CVP, providing a new, reliable water supply. This supply would be new water to the Bay-Delta system. This new water would result from the fact that New Bullards Bar Reservoir would be re-operated to provide releases of water that otherwise would be spilled in the winter and early spring during times of Delta excess when the SWP and CVP pumps would not be able to divert this additional water. The second area of benefit would be the ability to re-operate Oroville Reservoir and/or Shasta Reservoir according to an assured subsequent year supply from the Yuba River. SWP and CVP operators could fold the increased water supply from the Yuba River into water supply planning and carryover storage rule curves for these facilities. The third area of benefit is the secondary effects of this type of operation. As an example, increased Delta flows, at times of critical fishery needs that may result from re-operation of New Bullards Bar Reservoir, may provide the opportunity to re-examine constraints on Delta SWP and CVP operations.

Operational rules for the YRDP facilities would consist of (1) meeting the in-stream flow requirements of D-1644 or alternative requirements, (2) meeting the in-basin water needs of Yuba County, (3) satisfying contractual power requirements, (4) meeting FERC license requirements, and (5) utilizing the facilities to regulate flows on the Yuba River and store water in New Bullards Bar Reservoir for use below the Yuba River in the Feather and Sacramento rivers and in the Delta. Because the project would consist of agreements for

long-term operational rules that would include out-of-county water deliveries, the YRDP supplemental supplies could be relied upon in SWP and CVP operational planning.

Yuba County Residents

The primary objective of the coordinated operations project from the Agency's perspective would be to assure a secure water resource future for the residents of Yuba County. Revenue from a coordinated operations program would be used to further flood control in the county. As in the past with short-term transfer revenues, the majority of funds would be used for the local cost share of the Yuba/Feather Flood Management Program. Secondly, a firm water supply for the agricultural base of the county would greatly assist in providing the needed economic stability that this struggling county requires.

Member Districts

The primary in-county, direct water supply project beneficiaries are the member districts in Yuba County. Given the uncertainties of future water supplies from the recent State Water Resources Control Board Decision D-1644, the once firm water supply from the YRDP has been compromised. Operational studies of the YRDP surface water supplies show that in 2006 when the in-stream flow requirements of D-1644 increase significantly, in-basin water supply shortages will occur frequently (Figure 14C/D-2). A coordinated operations accord, which would have to include alternative long-term in-stream flow requirements to those specified in D-1644, together with the implementation of a groundwater conjunctive use program that augments surface water supplies, could result in firm, dry-year water reliability for in-county needs.

Out-of-county Water Users

The intent of coordinated operations is to provide a firm, long-term supplemental water supply to the SWP and/or CVP for statewide benefit. With a dry-year supplemental water supply of approximately 100,000 to 150,000 acre-ft, SWP and CVP supplies would be significantly augmented. The use of this supplemental supply could (1) provide increased flows on the Feather River of up to 50 percent in the summer to supply Feather River divertors, (2) be delivered to the Delta for export, (3) and be "backed up" into Folsom, Oroville, or Shasta for later delivery.

Environmental

An integral part of the planning for coordinated operations would be to match re-operated flows in the Lower Yuba River with fishery enhancement actions. This would provide supplemental benefits beyond, or as alternative to, the already extensive additional flows provided for under D-1644 interim flows. Given the availability of pumping capacity at the Delta pumps of the SWP and CVP in the summer of dry years, one of the greatest potential benefits along the lower Yuba River could be summer flow enhancement for steelhead trout, a federally listed species.

3. Project Costs

The cost opinions shown, and any resulting conclusions on project financial or economic feasibility or funding requirements, have been prepared for guidance in project evaluation

from the information available at the time of the estimate. It is normally expected that cost opinions of this type, an order-of-magnitude cost opinion, would be accurate within +50 to -30 percent. Project costs were developed at a conceptual level only, using data such as cost curves and comparisons with bid tabs and vendor quotes for similar projects. The costs were not based on detailed engineering design, site investigations, and other supporting information that would be required during subsequent evaluation efforts.

The final costs of the project and resulting feasibility will depend on actual labor and material costs, competitive market conditions, actual site conditions, final project scope, implementation schedule, continuity of personnel and engineering, and other variable factors. As a result, the final project costs will vary from the opinions presented here. Because of these factors, project feasibility, benefit/cost ratios, risks, and funding needs must be carefully reviewed prior to making specific financial decisions or establishing project budgets to help ensure proper project evaluation and adequate funding.

The primary initial project costs would be those associated with detailed investigation and analysis, and preparation of the feasibility study report. The estimated cost of the feasibility study is $1.75 million with the majority of costs for the study allocated to examination of the statewide water supply system and Bay-Delta environment. The long-term costs of the project are undetermined, but can generally be characterized as annual recurring payments for re-operation of the YRDP facilities.

4. Environmental Issues

A number of environmental effects must be examined and addressed for a full-scale long-term coordinated operations project in Yuba County. Terrestrial, fishery, economic, and biologic effects of the project would need to be examined and potentially mitigated.

A draft California Environmental Quality Act (CEQA) checklist was not prepared for this proposed project because no physical alterations to the environment would occur as a result of this proposed action.

Groundwater

As coordinated operations is only feasible with a reliable water supply within the county, and that reliability is in part dependent on the Yuba County Conjunctive Use Program, groundwater levels would fluctuate with dry-year conditions. Groundwater storage conditions and resulting water levels would vary depending upon the hydrologic cycle and the extent to which groundwater would be relied upon to meet local water supply needs. The primary management objective of the Yuba County Conjunctive Use Program would be to utilize groundwater within safe yield levels to avoid significant negative impacts to the groundwater basin. Groundwater-level induced impacts would need to be fully examined to determine the primary and secondary impacts associated with varying groundwater levels.

Fisheries

A significant environmental challenge to the project would be to determine the effects on streamflows of the Yuba River and Bay-Delta system, and resulting fishery habitat effects.

Surface water impacts on fisheries caused by changed flow regimes would need to be examined. It would be the ultimate objective of the feasibility study to identify a coordinated operation that would provide for the enhancement of the Yuba River fishery, especially federally listed species. In addition, using the results of previous analysis of the Bay-Delta system, benefits or impacts within the Delta would also be examined and quantified.

A draft California Environmental Quality Act (CEQA) checklist was not prepared for this proposed project because no physical alterations to the environment would occur as a result of this proposed action.

5. Implementation Challenges

The Coordinated Operations Project would have a significant number of challenges. In order to meet the requisite objectives of the Agency, the cooperation and coordination of many regulatory, stakeholder, and water purveyor entities would be required. As always with Agency activities, local acceptance would be needed, and local concerns would have to be addressed. In addition, as previously stated, the Yuba County Conjunctive Use Program would have to provide the necessary additional dry-year water supply so that in-basin water needs can be met in dry years. Coordinated operations of the YRDP would require the cooperation of the CDFG, USFWS, and NMFS to address fishery concerns. As the basis of the project is the coordinated operations with SWP and CVP facilities, and these facilities have an affect on the Bay/Delta environment, the complexities of the potential range of impact on this system would need to be examined and understood.

6. Implementation Plan

The proposed plan for implementation contains two tracks/phases: (1) examination of the project through a comprehensive feasibility study and (2) development of operating agreements/cooperative agreements among many stakeholder agencies with governing authority and funding development. Each track/phase is discussed below.

Feasibility Study

Detailed study and analysis of the effects, opportunities, and costs of a coordinated operation of the YRDP with the SWP and CVP would touch on many subject areas and require a broad array of expertise. Two of the most complex areas of investigation would be the hydrologic elements and the fishery habitat elements. The majority of investigation is expected to be focused on the effects of the project on the SWP, CVP, and Bay-Delta system, and examination of alternative flow regimes for fishery enhancement on the Lower Yuba River. Previously completed study results and model development of the YRDP would be used, in part, to analyze the Yuba River basin. The feasibility study is expected to take 18 months at a cost of $1.75 million. A brief list of the major tasks and summary description of each task follows:

1. Hydrologic analysis—The hydrologic analysis would include the lower Yuba River including the YRDP, the SWP facilities and service area, the CVP facilities and services, and the Bay-Delta system. Extensive study of each of these regions has been completed.

However, to assess the opportunities and impacts of a linked, coordinated operation, the system would need to be analyzed as a unit. Traditionally, models that use a monthly time step have been used to evaluate these systems. A monthly time step, although adequate for gross water supply operations planning and analysis, cannot fully examine the intra-month conditions such as the details of Delta condition and reservoir refilling impacts. To address these effects, analysis that augments the monthly results with targeted daily time step analysis may be needed.

The objectives of the hydrologic analysis and modeling efforts are (1) to quantify the ability of the system to meet all in-basin needs, (2) to quantify the extent to which conjunctive use supplements in-basin needs and allows for supplemental out-of-county deliveries, (3) to determine the hydrologic response of the groundwater basin to conjunctive use operations that would support out-of-county deliveries, and (4) to quantify the extent to which the YRDP can be flexibly operated beyond the requirements of regulatory in-stream flows, power generation, in-basin demands, and flood control.

2. Fishery report—The objective of this task would be to identify opportunities for alternative adaptive fishery management, which could be coupled with coordinated operations deliveries for out-of-county use, resulting in benefits to the fisheries habitat and out-of-county uses. The potential for the coupling of these objectives is that coordinated operations that would provide supplemental water supplies below the Yuba River would transit the Lower Yuba River, the Feather River, and into the Delta, increasing stream flows along these reaches for certain critical times of the year.

Much of this work would utilize the recent analysis that has been provided as testimony for the State Water Resources Control Board Lower Yuba River water right hearings. Additional coordination between resource agencies and fishery experts would be needed to establish baseline criteria by which to assess benefits.

3. Operational alternatives investigation – conceptual operations plan—Investigation of operational alternatives would be targeted towards a set of project objectives, which would be developed under this plan. Operational alternatives would be developed based on the results of the hydrologic analysis that would define the extent to which coordinated operations can take place while meeting the Agency's objectives and responsibilities for reservoir operation.

4. Affected environment investigation and environmental compliance—Areas to be examined include biological resources such as fisheries and terrestrial species, agricultural land use, recreation, regional economics, social conditions, and cultural resources. Much of the results of the fishery enhancement report would be used to document the effect of the project on fisheries.

5. Economic analysis—Economic analysis would consists of developing project cost data covering a wide range of elements, determining economic benefits of the project and examining third-party economic effects.

Contracts, Agreements and Funding

As many regulatory, stakeholder, and water purveyor entities are potential parties to the project, it is expected that there would be an array of agreements and that the forms would

be varied. Agreement on the project would range from memoranda of understanding with stakeholders to contracts for water delivery and compensation. The process and tracks for completion of each of these agreements would need to be defined through an initial scoping of the primary parties to the project.

During the development of agreements, a project management and operations plan that would become part of agreements would be developed. The project management and operations plan would result from the conceptual operations plan and would define the roles, responsibilities, and criteria by which coordinated operations are accomplished.

Project Schedule

The feasibility study is expected to take 18 months to complete. Completion of the environmental compliance (CEQA and NEPA), which would be started during the feasibility study time period, would take an additional 6 months. Development of contracts and agreements and the final project management and operation plan can be completed during the 6 months of environmental compliance process, but execution of agreements can only be completed once the environmental document(s) are final. Project implementation could begin therefore in about 2 years.

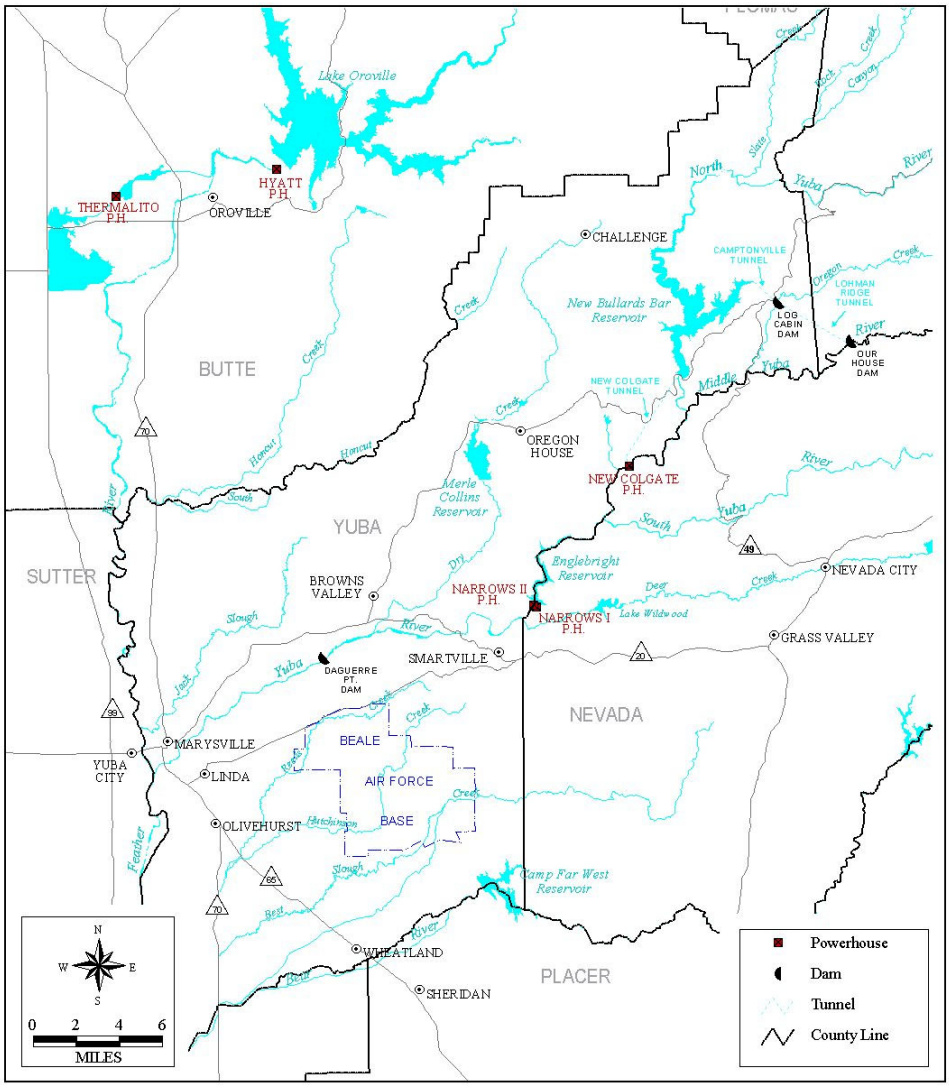

FIGURE 14C/D-1
PROJECT LOCATION MAP
BVID CONJUNCTIVE USE AND WATER MANAGEMENT PROGRAM (SHORT-TERM)
SHORT-TERM PROJECT EVALUATIONS
SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT

CH2MHILL
in association with
MONTGOMERY WATSON HARZA
MBK
SWRI

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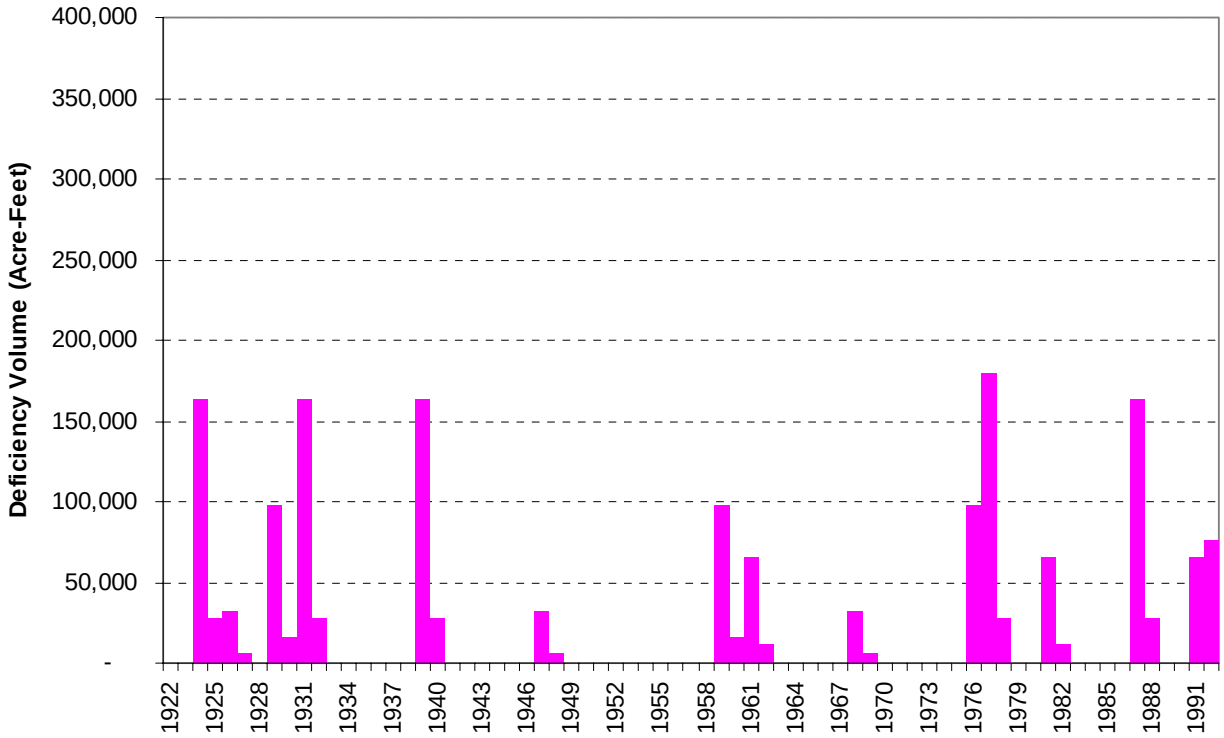

FIGURE 14C/D-2
MODEL SIMULATION RESULTS - CONSUMPTIVE USE DELIVERY DEFICIENCY
BVID CONJUNCTIVE USE AND WATER MANAGEMENT PROGRAM (SHORT-TERM)
SHORT-TERM PROJECT EVALUATIONS
SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT

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